$$V = \frac{\Delta x}{\Delta t}$$

Example:

60 km/h for 1.5 h $\Delta x = 90$ km

Stop for lunch for .5 h $\Delta x = 0$ km

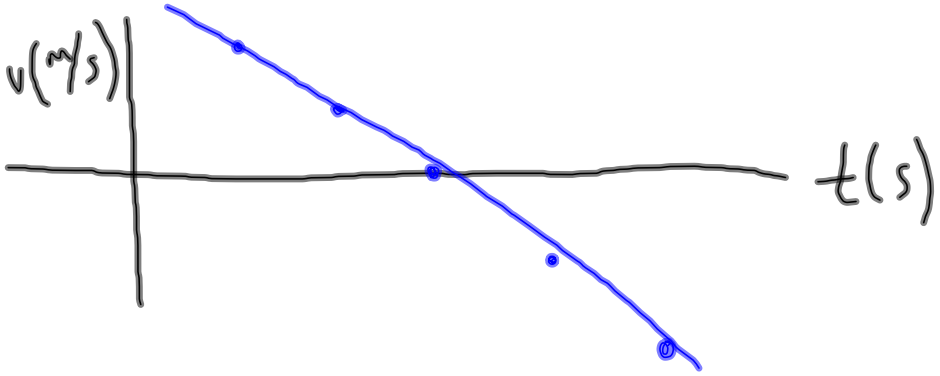
100 km/h for 1.0 h $\Delta x = 100$ km

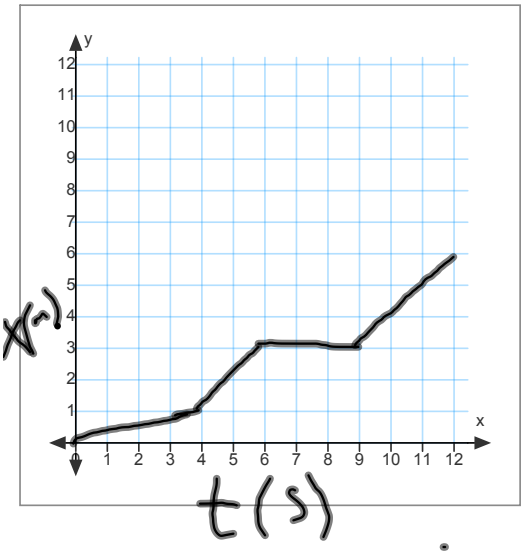
total $\Delta x = 190$ km

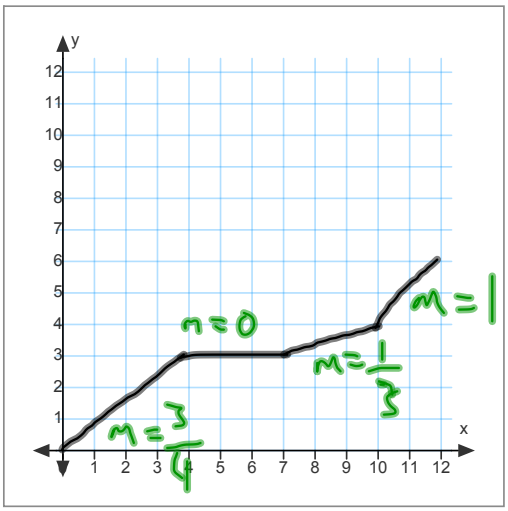
total $\Delta t = 3$ h

$$V = \frac{190\text{ km}}{3\text{ h}}$$

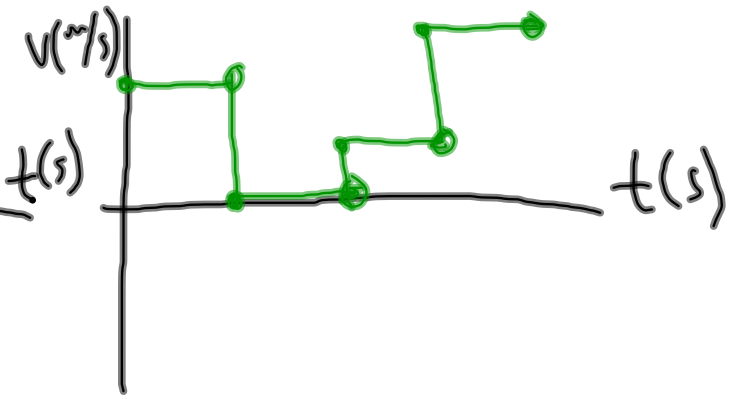
$= 63.3$ km/h

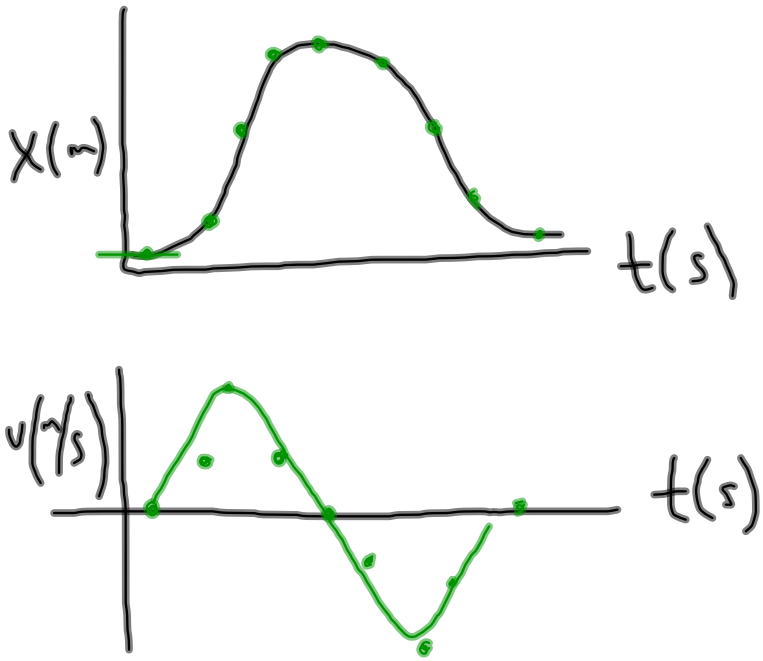



y
x
x(m)
t(s)


y
x
m=0
m=1/3
m=1
m=3


v(m/s)
t(s)


v(m/s)
t(s)
t(s)

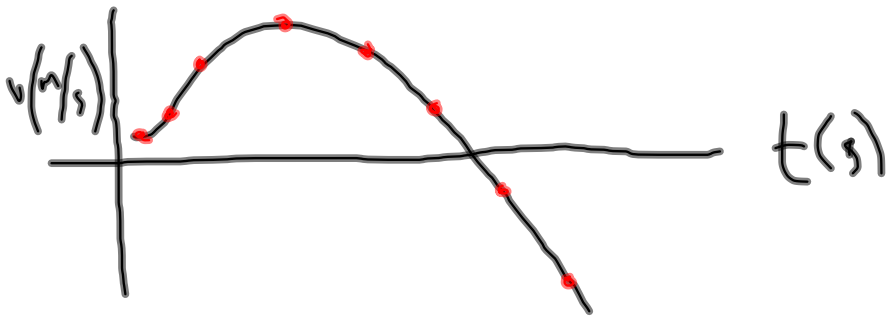

x(m)
t(s)
v(m/s)
t(s)

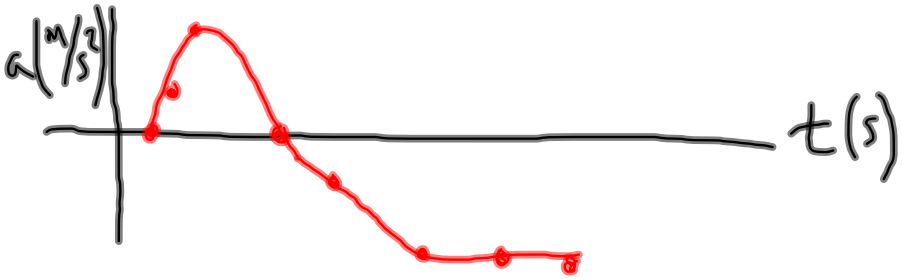
Acceleration:

- variable: a ; units $m/s/s \rightarrow m/s^2$

- average $a = \frac{\Delta v}{\Delta t} = \frac{v_f - v_i}{t_f - t_i} = \frac{\Delta x}{(\Delta t)(\Delta t)} = \frac{\Delta x}{(\Delta t)^2}$

- instantaneous → slope of tangent line at point on velocity v. time graph





HW:

p. 65: 7; p. 66: 9, 13, 21, 23